

1. An automated station for attaching a connector to a portion of a fiber, the station comprising:

5 a carrier for supporting the connector that, responsive to a control signal, is moveable in at least two axial directions and is rotatable; and
a support for holding the fiber so that the fiber portion is available to receive the connector.

10 2. The automated station recited in claim 1 wherein said carrier moves in at least three axial directions.

15 3. The automated station recited in claim 1 including a linear drive system for moving said carrier in said at least two axial directions.

20 4. The automated station recited in claim 1 wherein said station includes a connector mounting path that passes through said fiber holding support, and wherein said carrier is moveable along said connector mounting path.

25 5. The automated station recited in claim 4 wherein said fiber holding support, responsive to a control signal, releases the fiber as said carrier moves a predetermined distance along said connector mounting path.

30 6. The automated station recited in claim 1 further including a connector supply, an adhesive dispenser, and a heater, said connector carrier being moveable, responsive to a control signal, adjacent to each of said connector supply, said adhesive dispenser and said heater.

35 7. The automated station recited in claim 1 wherein said carrier is rotatable at least 180 degrees.

40 8. The automated station recited in claim 1 wherein said fiber support is stationary.

9. The automated station recited in claim 1 further including an orienter system that, responsive to a control signal, changes an end-to-end orientation of the connector.

5 10. The automated station recited in claim 9 further including a chuck for supporting the connector, said chuck being moveable responsive to a control signal to change the end-to-end orientation of the connector.

10 11. The automated station recited in claim 1 further including a detector for determining at least one of an end-to-end orientation of the connector, an orientation of a fiber through hole in the connector, and an alignment of a polarization maintaining axis of the fiber.

15 12. The automated station recited in claim 11 including at least one of a chuck that is rotatable, responsive to a control signal, to change an end-to-end orientation of the connector, a collet that is rotatable to change the position of an offset fiber through hole in the connector, and a collet that is rotatable to place the connector in a position that corresponds with an alignment of a polarization maintaining axis of the fiber..

20 13. The automated station recited in claim 1 further including a delivery system for supplying a connector to said carrier.

14. The automated station recited in claim 13 wherein said delivery system includes an escapement, a loader and a chuck.

25 15. The automated station recited in claim 1 further including a receiving area for a tray that supports the fiber, wherein said fiber support is located adjacent said tray receiving area.

30 16. The automated station recited in claim 1 wherein said carrier is a collet.

17. The automated station recited in claim 1 being in communication with a computer controller.

18. An automated station for attaching a connector to a portion of a fiber, the
5 station comprising:

a support for holding a fiber so that the fiber portion is available to receive the connector;

a detector for determining an alignment of a polarization maintaining axis of the fiber;

10 a carrier for supporting the connector that, responsive to a control signal, orients the connector into a position that corresponds with the alignment of the polarization maintaining axis of the fiber.

19. The automated station recited in claim 18 wherein said detector assesses a
15 position of stress members in the fiber.

20. The automated station recited in claim 18 wherein said carrier is rotatable responsive to a control signal.

20 21. The automated station recited in claim 18 wherein said carrier is moveable in at least two axial directions.

22. The automated station recited in claim 21 wherein said carrier is moveable in at least three axial directions.

25 23. The automated station recited in claim 18 wherein said carrier, responsive to a control signal, is moveable to mount the connector about the fiber portion in the position that corresponds with the alignment of the polarization maintaining axis of the fiber.

30 24. The automated station recited in claim 23 being in communication with a computer controller.

25. An automated station for attaching a connector to a portion of a fiber, the station comprising:

- a fiber portion working area;
- a support for holding the fiber so that the fiber portion extends into said fiber working area;
- 5 a carrier for supporting the connector that, responsive to a control signal, is moveable in said fiber working area;
- a heater, responsive to a control signal, that directs heat into said fiber working area to at least pre-set an adhesive that has been included in the connector.

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26. The automated station recited in claim 25 wherein said heater includes a hot air blower.

15 27. The automated station recited in claim 25 wherein said fiber support has a holding position and a release position, and responsive to a control signal, said fiber support moves into said release position when said heater, responsive to a control signal, shuts off.

20 28. The automated station recited in claim 25 in communication with a computer controller.

25 29. An automated station for attaching a connector to a portion of a fiber, the station comprising:

- a source for supplying a connector at a connector supply location;
- an adhesive dispenser for filling the connector with adhesive at an adhesive dispensing location;
- a support for holding the fiber so that the fiber portion is available for mounting by the connector;
- 30 a heater for at least pre-setting the adhesive filled connector at a heating location; and

a carrier that is adapted to support the connector and that is moveable, responsive to one or more control signals, to said connector supply location, said adhesive dispensing location and said heating location.

- 5 30. The automated station recited in claim 29 wherein said carrier is moveable from said connector supply location to said adhesive dispensing location, from said adhesive dispensing location to said heating location, and from said heating location to said connector supply location.
- 10 31. The automated station recited in claim 29 wherein said carrier is moveable in at least two axial directions.
- 15 32. The automated station recited in claim 31 wherein said carrier is moveable in at least three axial directions.
- 15 33. The automated station recited in claim 29 wherein said carrier is rotatable.
- 15 34. The automated station recited in claim 29 wherein said carrier is moveable to and along said fiber support location.
- 20 35. The automated station recited in claim 34 wherein said carrier is rotatable.
- 20 36. The automated station recited in claim 34 wherein said carrier is moveable in at least two axial directions.
- 25 37. The automated station recited in claim 36 wherein said carrier is reciprocatingly moveable along said fiber support location.
- 30 38. The automated station recited in claim 29 in communication with a computer controller.

39. An automated station for attaching a connector to a portion of a fiber, the station comprising:

a receiving area for a tray that is adapted to hold the fiber in a manageable configuration with the fiber portion extending outwardly from the tray;

5 a fiber gripper adapted to support the portion of the fiber and that is
moveable, responsive to a control signal, within said receiving area;

a hold down member, responsive to a control signal, that is moveable from a first position that holds the tray in said receiving area and a second position that releases the tray in said receiving area.

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40. The automated station recited in claim 39 wherein said hold down member includes a clamp.

41. The automated station recited in claim 39 wherein said hold down member is in said first position when said fiber gripper is moved within said tray receiving area.

42. The automated station recited in claim 41 further including a carrier for the connector and a supply of connectors, wherein responsive to a control signal said carrier is moveable to said connector supply when said fiber gripper is moved within said receiving area.

43. The automated station recited in claim 39 in communication with a computer controller.

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44. An automated station for attaching a connector in a pre-determined orientation to a portion of a fiber, the station comprising:

a carrier adapted to support the connector;
a system for detecting a first orientation of the connector;
a support adapted to hold the fiber so that the fiber portion is available to receive the connector;

wherein said carrier, responsive to a control signal, is moveable to position the connector in the pre-determined orientation.

45. The automated station recited in claim 44 wherein said carrier is rotatable.

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46. The automated station recited in claim 45 wherein said carrier is rotatable at least 180 degrees.

47. The automated station recited in claim 44 wherein said detector detects 10 the position of a hole extending through an end of the connector.

48. The automated station recited in claim 44 wherein said detector is a visual system.

15 49. The automated station recited in claim 44 in communication with a computer controller.

50. An automated station for attaching a connector to a portion of a fiber, the station comprising:

20 a support adapted to hold the fiber so that the fiber portion is available to receive the connector;

a carrier adapted to support the connector that, responsive to a control signal, is moveable along the fiber portion in a path including said fiber support;

25 wherein said fiber support, responsive to a control signal, moves out of said path of said carrier after said carrier has been moved a pre-determined length along said path.

51. The automated station recited in claim 50 wherein said fiber support includes a primary clamp and a secondary clamp.

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52. The automated station recited in claim 51 wherein said secondary clamp is moveable, responsive to a control signal, out of said path of said carrier after said carrier has been moved a pre-determined length along said path.

5 53. The automated station recited in claim 52 wherein said primary clamp is not located within said path of said carrier.

54. The automated station recited in claim 51 in communication with a computer controller.

10 55. A method, under computer control, of automatically attaching a connector to a portion of a fiber, comprising,
providing the connector and the portion of the fiber;
determining the orientation of the connector;
15 adjusting the connector to a pre-determined orientation;
mounting the connection in the pre-determined orientation onto the
portion of the fiber.

20 56. The method recited in claim 55 wherein the step of determining the orientation of the connector includes identifying the end of the connector.

25 57. The method recited in claim 56 wherein the step of determining the orientation of the connector includes identifying the position of a hole in the end of the connector.

58. The method recited in claim 56 wherein the step of adjusting includes rotating the connector.

30 59. A method, under computer control, of automatically attaching a connector to a portion of a fiber, comprising,
providing a fiber having a polarization maintaining axis;
providing a connector;

detecting the alignment of the polarization maintaining axis of the fiber;
orienting the connector into a position that corresponds to the alignment
of the polarization maintaining axis of the fiber; and
mounting the connector in the corresponding position to the fiber portion.

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60. The method recited in claim 59 wherein the alignment of the polarization maintaining axis of the fiber is not adjusted during said mounting step.

61. The method recited in claim 59 wherein said detecting step includes one
10 of active detection, passive detection and POL.

62. A method, under computer control, of automatically attaching a connector to a portion of a fiber, comprising,

15 providing the connector and the fiber portion at a connector attachment station;
filling the connector with an adhesive at the connector attachment station;
mounting the adhesive filled connector onto the fiber portion at the connector attachment station; and
heating the connector mounted on the fiber to at least preset the adhesive
20 at the connector attachment station.

63. A method, under computer control, of automatically attaching a connector to a portion of a fiber, comprising,

25 providing a tray for supporting the fiber in an organized arrangement with the portion of the fiber extending outward of the tray;
mounting a connector to the fiber portion extending outward of the tray;
temporarily holding the tray against movement;
placing the connector mounted fiber portion back in the tray.

30 64. An automated station for attaching a connector to a portion of a fiber, the station comprising:

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means for supporting the connector that, responsive to a control signal, is moveable in at least two axial directions and is rotatable; and

means for holding the fiber so that the fiber portion is available to receive the connector.

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65. An automated station for attaching a connector to a portion of a fiber, the station comprising:

means for holding a fiber so that the fiber portion is available to receive the connector;

means for determining an alignment of a polarization maintaining axis of the fiber;

means for supporting the connector that, responsive to a control signal, orients the connector into a position that corresponds with the alignment of the polarization maintaining axis of the fiber.

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66. An automated station for attaching a connector to a portion of a fiber, the station comprising:

a fiber portion working area;

means for holding the fiber so that the fiber portion extends into said fiber working area;

means for supporting the connector that, responsive to a control signal, is moveable in said fiber working area;

means, responsive to a control signal, that directs heat into said fiber working area to at least pre-set an adhesive that has been included in the connector.

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67. An automated station for attaching a connector to a portion of a fiber, the station comprising:

a source for supplying a connector at a connector supply location;

an adhesive dispenser for filling the connector with adhesive at an adhesive dispensing location;

a support for holding the fiber so that the fiber portion is available for mounting by the connector;

a heater for at least pre-setting the adhesive filled connector at a heating location; and

means for supporting the connector that is moveable, responsive to one or more control signals, to said connector supply location, said adhesive dispensing location
5 and said heating location.

68. An automated station for attaching a connector to a portion of a fiber, the station comprising:

10 a receiving area for a tray that is adapted to hold the fiber in an organized configuration with the fiber portion extending outwardly from the tray;

means for supporting the portion of the fiber and that is moveable, responsive to a control signal, within said receiving area;

15 means for holding the tray in said receiving area that, responsive to a control signal, is moveable from a first position that holds the tray in said receiving area and a second position that releases the tray in said receiving area.

69. An automated station for attaching a connector in a pre-determined orientation to a portion of a fiber, the station comprising:

20 means for supporting the connector;

means for detecting a first orientation of the connector;

means for holding the fiber so that the fiber portion is available to receive the connector;

wherein said means for supporting the connector, responsive to a control signal, is moveable to position the connector in the pre-determined orientation.

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70. An automated station for attaching a connector to a portion of a fiber, the station comprising:

means for holding the fiber so that the fiber portion is available to receive the connector;

30 means for supporting the connector that, responsive to a control signal, is moveable along the fiber portion in a path including said means for holding;

wherein said means for holding, responsive to a control signal, moves out of said path of said means for supporting after said means for supporting has been moved a pre-determined length along said path.